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10/516,579

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Steven D Kloos

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EXAMINER

MENON, KRISHNAN S

ART UNIT

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1797

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|-------------------------------------|--|
| Office Action Summary | Application No. 10/516,579 | Applicant(s) KLOOS ET AL. | |
| | Examiner Krishnan S. Menon | Art Unit 1797 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-73 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-73 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claims 1-73 are pending as amendment 3/6/08.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 43-47 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-43 of copending Application No. 10/524,155. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of ‘155 recite all the limitations of the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Uhlinger (US 6,190,556), Lien (US 4,802,982), and/or Robbins (US 6,190,558).

Claim interpretation: this application has a total of 73 claims, 13 of which are independent. These claims are directed at a membrane device, and a combination of membrane device with a home reverse osmosis system. However the claims are limited to a [spiral wound] membrane device having one or more first and second membrane sheets separated by a permeate carrier, the permeate carrier having certain "H" value. The membrane has certain "A" value and certain " β " value. Claims also recite permeate carrier thickness, and the characteristics of the membrane such as MgSO₄ rejection, lengths and widths of the membrane leaves, etc.

The parameters H, A and β are defined by Lien. Lien also teaches how to optimize these factors for improving the performance of the spiral wound membrane elements. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover

the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Definitions of H, A and β values (page 6 of applicant’s specification):

A is the membrane permeability, which is a membrane characteristic.

H is defined as a product side pressure drop parameter, and depends on the friction factor, fluid viscosity and the hydraulic diameter of the channel. Of these, at least the fluid viscosity is operating fluid-dependent and unrelated to the device claimed. Friction factor is a combination of material and flow characteristics. β is a function of the membrane characteristic A, cartridge length, and H. Thus what is accomplished by these equations is a method of optimizing the membrane cartridge design for certain operations conditions. From the definition of H, it is very clear that many different designs of permeate spacer material could have the same/similar range of values for H. Thus reciting values for these parameters in the claim would not make them patentable without specific structure and also a showing of secondary evidence for patentability. ***In fact the recitation of the values of these parameters which can be met by different designs of materials would also make the claims indefinite.***

Uhlinger'556 teaches membrane devices capable of salt rejection >50% (col 8 lines 1-37: discusses monovalent and divalent salts). Even though MgSO_4 is not specifically taught, it would be obvious to one of ordinary skill in the art that MgSO_4 will have similar rejections. Uhlinger'556 teaches the membrane permeability (A value) for reverse osmosis and nanofiltration membranes as ranging from 10 to over 60 (converted from the data of col 2 lines 1-10). Uhlinger'556 does not teach the H and β

values, thickness of permeate carrier or leaf length. Lien'982 teaches all these parameters and how to optimize the design based on these parameters (see columns 7-9, tables and working examples). It would be obvious to one of ordinary skill in the art at the time of invention to use the teachings of Lien'982 in the teaching of Uhlinger'556 to optimize the membrane device design for the desired performance. Even though none of these references teach specifics of leaf length and the number of leaves, leaf length and the number of leaves are variables that one of ordinary skill is capable of optimizing to provide the required membrane area for the desired permeate (product water) flow. The cross flow velocity of the feed is a process parameter, which has no structural relationship with the device claimed, and one of ordinary skill in the art is also capable of optimizing flow velocity from the feed quality, and the device specifics to minimize the pressure drop.

Claims 39-47: Robbins'556 teaches a tankless home reverse osmosis system comprising spiral wound element which provides at least 150 gallons/day of permeate flow (see abstract, column 4 lines 1-36 and col 6 lines 5-12). The A value is greater than 25 (calculated from pressure, flow and membrane area). This system can operate at <30 psi driving pressure. Re the salt rejection, the system is expected to give >90% NaCl rejection, even though the reference does not provide such details. Uhlinger teaches membrane elements that provide such kind of rejections (col 8 lines 1-15). Lien'982 teaches A and β values and how to optimize the device design. The dimensions of the membrane device depend on the permeate flow required, and one of ordinary skill in the art would be capable of designing it. Regarding the specific

dimensions of membrane elements, such as 2" diameter and 12" length: such elements are commercially available and commonly used in home-RO units. One would use such dimensions in the teaching of Robbin because Robbin appears to be silent on the dimensions, and they are commercially available for similar purpose. Even otherwise, they are not patentable. In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device. In *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

Response to arguments traversing the rejection:

Arguments are not found persuasive. Applicant only makes the comment that all the limitations are not taught by the combination of references and then has reiterated the claim limitations in the argument. There is no showing of how or why the claimed limitations are not taught by or suggested by or inherent or obvious over the references. The rejection identifies the specific limitations of dimensions or values of parameters in the claims that do not appear in the references exactly as claimed, and shows why they

are obvious to one of ordinary skill. However, such parameters are defined by the references and the values of such can be optimized by using the teaching of the references, thus providing a prima facie case of obviousness.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S. Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on 571-272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Krishnan S Menon/
Primary Examiner, Art Unit 1797